

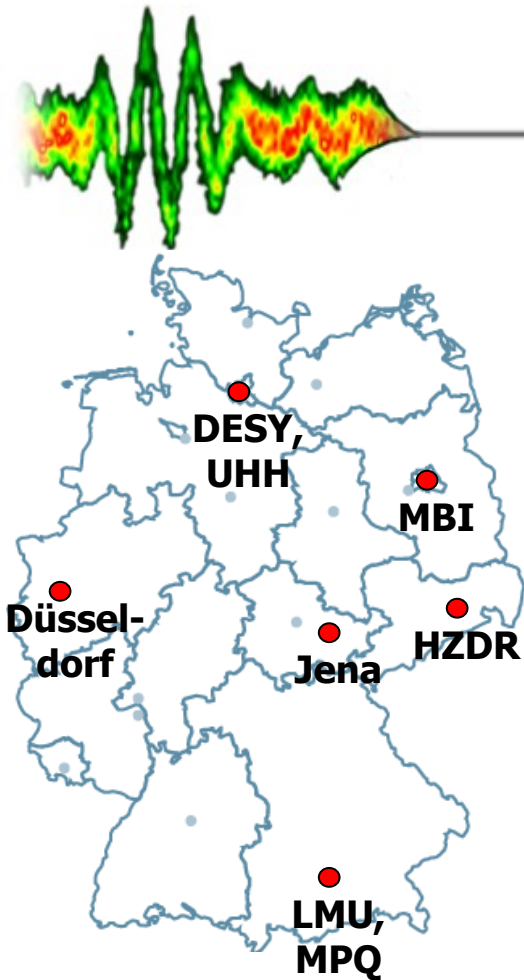


Status Germany

F. Grüner



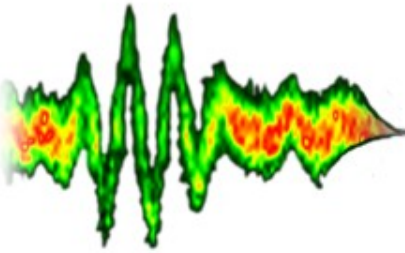
Overview



name	start	run time	partners
TransRegio 18	2004	3 x 4 years <i>talk by Oswald Willi</i>	Düsseldorf, Jena, LMU, MPQ, MBI
MAP Cluster of Excellence	2006	5+1 years follow-up proposal 2011	LMU, MPQ
Helmholtz Association	2011	<i>talk by Tom Cowan</i>	HZDR, DESY, UHH
CALA	2011	new university institute <i>s. talk by Stefan Karsch</i>	LMU, MPQ
ELI (EU)	2011	<i>talks by Georg Korn and Wolfgang Sandner</i>	PALS (Prague), LMU, MPQ, UHH/DESY

Düsseldorf

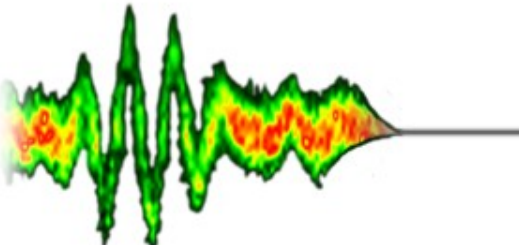
(Oswald Willi et al.)



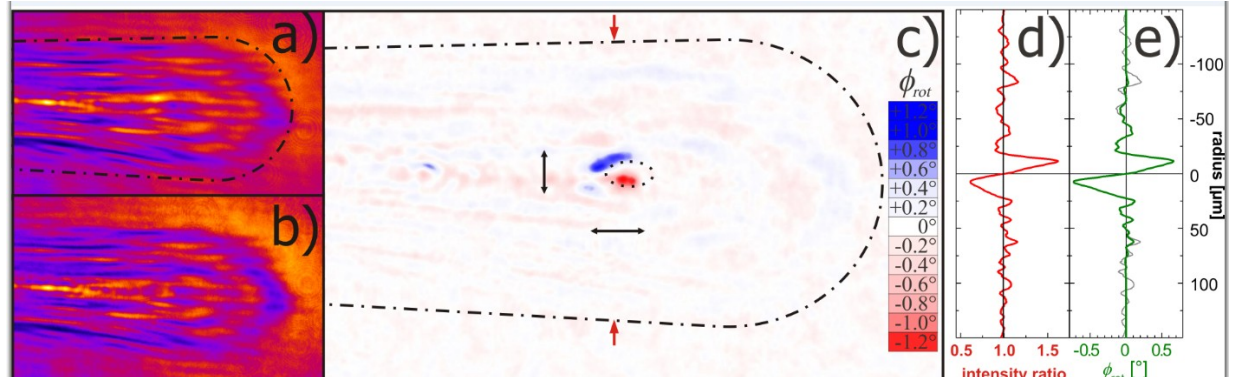
lasers	10 TW + 100 TW + 200 TW (25 fs) all synchronized planned upgrades: 100 → 200 TW; XPW (10^{12} contrast)
current electron beams	gas jets: 330 MeV gas targets (5-15 mm): stable 110 MeV
research	testing microchips for outer space staging of plasma accelerators theory + simulations

Jena

(Malte Kaluza et al.)



lasers	JETI: 32 TW (25 fs) on target, plasma mirrors for $>10^{12}$ contrast planned upgrade: 2012 2.5 J
current electron beams	300 MeV energy spread 1-2 % charge 1-15 pC
research	light sources (THz, betatron, undulator) cell irradiation e-beam diagnostics (with MPQ)
highlight	direct observation of electrons inside bubble

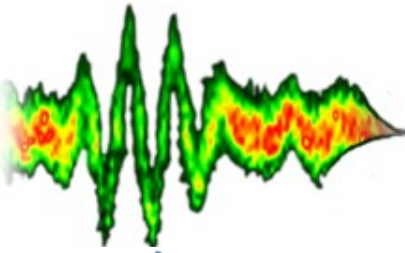


M. Kaluza et al., PRL 2010

A. Buck et al.,
Nature Phys. (2011)

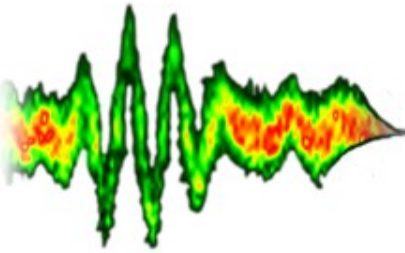
Max-Born Institute (Berlin)

(Matthias Schnürer et al.)



lasers	100 TW (25 fs) coupled with 30 TW (45 fs)
current electron beams	so far ion acceleration electrons start in 2012
research	(plasma) pump (ion/photon) probe experiments staging of plasma accelerators
highlight	record efficiency for laser into ion energy

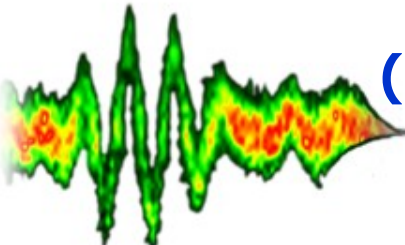
HZDR (Dresden) (Ulrich Schramm et al.)



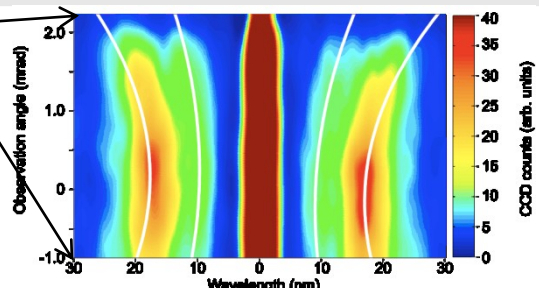
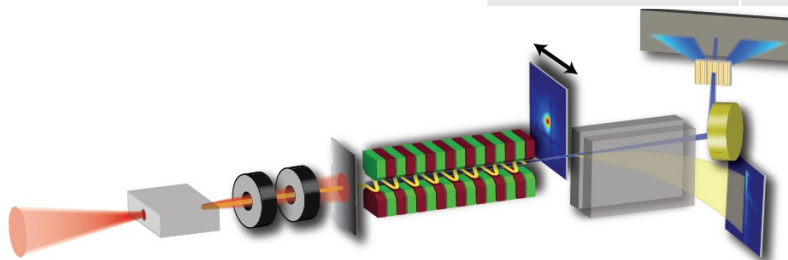
lasers	150 TW (25-30 fs) upgrade: 500 TW (25-30 fs), 2012 1 PW end of 2013
current electron beams	so far ion acceleration electron acceleration started; joint experiments with DESY/UHH
research	injection of external ELBE beam (100 fs)

LMU/MPQ (Munich)

(Stefan Karsch, Laszlo Veisz, Florian Grüner, et al.)

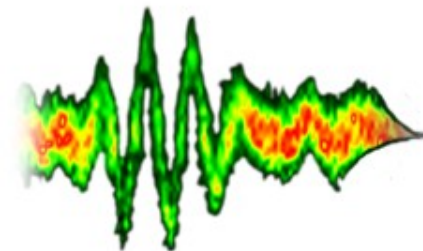


lasers	ATLAS: 100 TW (25 fs, Ti:Sapph) LWS-20: 16 TW (8 fs , OPCPA) planned upgrades: LWS-100 (5 fs) ATLAS-3000, PFS: 5J/5fs/1kHz (in CALA)
current electron beams	LWS-20: 20-40 MeV, 5-6 fs (measured) ATLAS: 600 MeV, 200 pC
research	e-beam diagnostics (bunch length, emittance) light sources (undulator, table-top FEL, medical imaging) theory + simulation
highlight	highly stable 200-600 MeV electrons first laser-driven soft X-ray undulator source



M. Fuchs,..., J. Osterhoff,
...,S. Karsch, F. Grüner,
Nature Phys. 5, 826 (2009)

Overview summary



item	number (estimate)
labs	7
laser systems > 100 TW	5 (today)
man power	11 profs./groups 13 postdocs >20 PhDs
expertises:	
<ul style="list-style-type: none">• stable electron beams• e-beam diagnostics• beam transport• laser-driven light sources	

